

WHAT IS CLAIMED IS:

1. An electrosurgical instrument for selectively providing RF power to operate as main modes both a monopolar handpiece and a bipolar handpiece each in multiple sub-modes, comprising:

- (a) a console unit,
- (b) RF power generating circuitry inside the console and capable of generating electrosurgical currents at a given frequency in the MHz range,
- (c) first electrical connectors at the console for receiving a monopolar handpiece,
- (d) second electrical connectors at the console for receiving a bipolar handpiece,
- e) first means for controlling the output power of the electrosurgical currents and for supplying the controlled electrosurgical currents at the given frequency in a selected first sub-mode to the first electrical connectors,
- f) second means for controlling the output power of the electrosurgical currents and for supplying the controlled electrosurgical currents at the given frequency in a selected second sub-mode to the second electrical connectors,
- g) whereby both the monopolar handpiece and the bipolar handpiece can be operated at the given frequency in the multiple sub-modes.

2. An electrosurgical instrument according to claim 1, further comprising footswitches and third electrical connectors at a side of the console for connection to the footswitches, said footswitches functioning to turn on and off the RF power generating circuitry.

3. An electrosurgical instrument according to claim 1, wherein the given frequency is a single frequency.

4. An electrosurgical instrument according to claim 3, wherein the given frequency is in the range of about 4 MHz.

5. An electrosurgical instrument according to claim 2, further comprising separate plural footswitches, and wherein said monopolar handpiece comprises a fingerswitch, said fingerswitch and one of said footswitches functioning to turn on and off the RF power generating circuitry for the monopolar handpiece, another of said footswitches functioning to turn on and off the RF power generating circuitry for the bipolar handpiece.

6. An electrosurgical instrument according to claim 5, further comprising means for preventing both the footswitch for the bipolar handpiece and the fingerswitch and footswitch for the unipolar handpiece to cause simultaneous supply of electrosurgical currents at both the first and second connectors.

7. An electrosurgical instrument according to claim 1, wherein the console unit comprises separate sub-mode selection switches and separate power control switches for the monopolar and bipolar handpieces.

8. An electrosurgical instrument according to claim 7, further comprising means in response to the selection of an operating main mode to vary an operating voltage supplied to the RF power generating circuitry.

9. An electrosurgical instrument according to claim 7, further comprising means in response to the selection of an operating sub-mode to vary an operating voltage supplied to the RF power generating circuitry.

10. An electrosurgical instrument according to claim 7, further comprising means in response to operation of a power control switch to vary an operating voltage supplied to the RF power generating circuitry.

11. An electrosurgical instrument according to claim 9, further comprising a voltage regulator having a reference voltage and outputting the operating voltage to the RF power generating circuitry, the voltage regulator including feedback means to vary its outputted operating voltage.

12. An electrosurgical instrument according to claim 7, further comprising independent means in response to the selection of an operating sub-mode and a power level to vary an operating voltage supplied to the RF power generating circuitry, the independent means being separate for each of the main monopolar and bipolar modes.

13. An electrosurgical instrument according to claim 11, wherein the voltage regulator is a voltage switching regulator, and the feedback means includes a voltage divider.

14. An electrosurgical instrument according to claim 13, wherein the operating sub-modes include the CUT, CUT/COAG, and HEMO modes which each generate modulating waveforms whose average voltage decreases when going from the CUT to the CUT/COAG, and from the CUT/COAG to the HEMO sub-modes, the voltage switching regulator functioning to

boost the operating voltage to the RF power generating circuitry in response to a selected waveform having a lower average voltage.

15. An electrosurgical instrument for selectively providing RF power to operate as main modes both a monopolar handpiece and a bipolar handpiece each in multiple sub-modes including CUT, CUT/COAG, and HEMO modes, comprising:

- (a) a console unit,
- (b) RF power generating circuitry inside the console and capable of generating electrosurgical currents at a given frequency in the 4 MHz range,
- (c) first means for generating modulated waveforms representative of the multiple sub-modes and supplying the modulated waveforms to the RF power generating circuitry, the selection of a sub-mode having a tendency to vary the output power from the RF power generating circuitry,
- (d) first electrical connectors at the console for receiving a monopolar handpiece,
- (e) second electrical connectors at the console for receiving a bipolar handpiece,
- (f) second means for controlling the output power of the electrosurgical currents to a maximum level and for supplying the controlled electrosurgical currents at the given frequency in a selected first sub-mode to the first electrical connectors for operating in the main monopolar mode,
- (g) third means for controlling the output power of the electrosurgical currents to substantially the same maximum level and for supplying the controlled electrosurgical currents at the given frequency in a selected second sub-mode to the second electrical connectors for operating in the main bipolar mode,
- (h) the second and third means functioning independently in response to selecting the main mode, the first or second sub-mode and the output power.

16. An electrosurgical instrument according to claim 15, wherein the second and third means comprise a voltage switching regulator employing feedback to control its output voltage and means for varying the feedback independently for each of the main modes in response to selecting the sub-mode, or the output power.

17. An electrosurgical instrument according to claim 16, wherein the feedback comprises a voltage divider network configured such that substantially the same maximum output power is produced irrespective of selecting the first or second sub-modes.

18. A method for treating patients with electrosurgical currents from a unitary electrosurgical instrument for selectively providing RF power to operate a monopolar handpiece and a bipolar handpiece in separate main modes, comprising the steps:

(a) operating the electrosurgical instrument to generate electrosurgical currents in one of the main modes at a single frequency in the 4 MHz range in a procedure for modulating tissue of the patient using a monopolar handpiece,

(b) operating the electrosurgical instrument to generate electrosurgical currents in the other main mode at the same frequency in the 4 MHz range in a procedure for modulating tissue of the patient using a bipolar handpiece.

19. The method of claim 18, wherein the electrosurgical instrument is capable of generating electrosurgical currents in the CUT, CUT/COAG, and HEMO sub-modes, and all three sub-modes are capable of being supplied to both the monopolar and bipolar handpieces when carrying out their respective procedures.

20. The method of claim 19, further comprising using independent power controls for each of the main modes, and operating the electrosurgical instrument such that the maximum output power is substantially the same irrespective of whether the CUT or CUT/COAG sub-mode is selected.